



Engineering Library

Industrial Standardization

and Commercial Standards Monthly

July

How Jones & Laughlin
Steel Corporation Uses
American Standard
Safety Codes in Its
New Strip Mill

(See Article on Page 153)

1938

What Standardization Does

Defines the materials and processes which make production most efficient and economic, including elimination of the waste that results from production of inferior goods

Effects economy by concentrating purchases on the most suitable and efficient material and by ensuring the successful development and application of technological advances

Eliminates superfluous types, sizes, and designs, with consequent economies in production and distribution costs

Affords convenience through the more efficient facilities provided by specially selected materials and equipment

Aids general acquaintance with the use of equipment, and makes processes more automatic because of greater uniformity, the advantage of this being particularly expressed in certain specialized spheres and in the transfer of operatives from unit to unit

Facilitates the ordering of supplies on a basis of national specifications in place of a multitude of individual specifications, the preparation of which is costly, while their use leads to misunderstanding and conflict. It also places trade on a basis that is equitable and intelligible as between suppliers and between suppliers and purchasers

Places on goods a registered quality distinction, ascertained by independent experts, and makes this available in a form that equips the average purchaser with a substantial degree of that expert discrimination that is possessed by expert buyers

Promotes and establishes public confidence in reliable advertising, labeling, or other description of goods, which excludes superficial and confusing elements because it is based upon intrinsic merit defined by national standards of quality and utility by which commodities, materials, and equipment may be made, tested, and sold

—By The New Zealand Standards Institute

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RUTH E. MASON, Editor

This Issue

Our Front Cover: *White-hot slabs of steel follow one another in rapid succession through the last of the four roughing stands of the new Jones & Laughlin 96-inch continuous strip mill.*

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

July, 1938

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JULY, 1938

Safety Pays Dividends

Steel Company finds American Standard safety codes help increase efficiency, improve employe relations, eliminate damage to equipment

by

H. J. Griffith

*Manager of Safety and Welfare
Jones & Laughlin Steel Corporation*

THAT safety pays dividends has been proven time and again in the plants of the Jones & Laughlin Steel Corporation since the inauguration, in 1926, of a separate department devoted to safety engineering. This department, giving its entire attention to the problem of accident prevention has, first of all, studied the company's practices to be certain they are in agreement with



Shields over the descaling spray pipes protect workmen in case of failure of the pipes, which carry 1,200 pounds pressure to the square inch

the safety regulations of the Pennsylvania State Department of Labor and Industry, and then, in order to be sure it has applied all principles of good safety practice, has taken advantage of the experience made available by the national safety organizations; and has applied the principles adopted as good safety practice in American Standard safety codes. This well planned and efficiently managed effort to bring into effect every means by which accidents can be prevented has resulted in dividends in management's knowledge that their employes are safe and comfortable while at work—dividends by increasing efficiency and improving employe relations—dividends by eliminating damage to valuable equipment and materials—dividends in the form of actual cash savings, by eliminating accidents that in the past led to expensive lawsuits or payment of compensation because of personal injuries to employes—these dividends have all accrued from a well planned and efficiently managed safety program.

The least tangible of these dividends is the increased efficiency of workmen in a safe plant as

the mill was acclaimed by safety engineers during a recent visit as one of the safest mills they had ever seen.

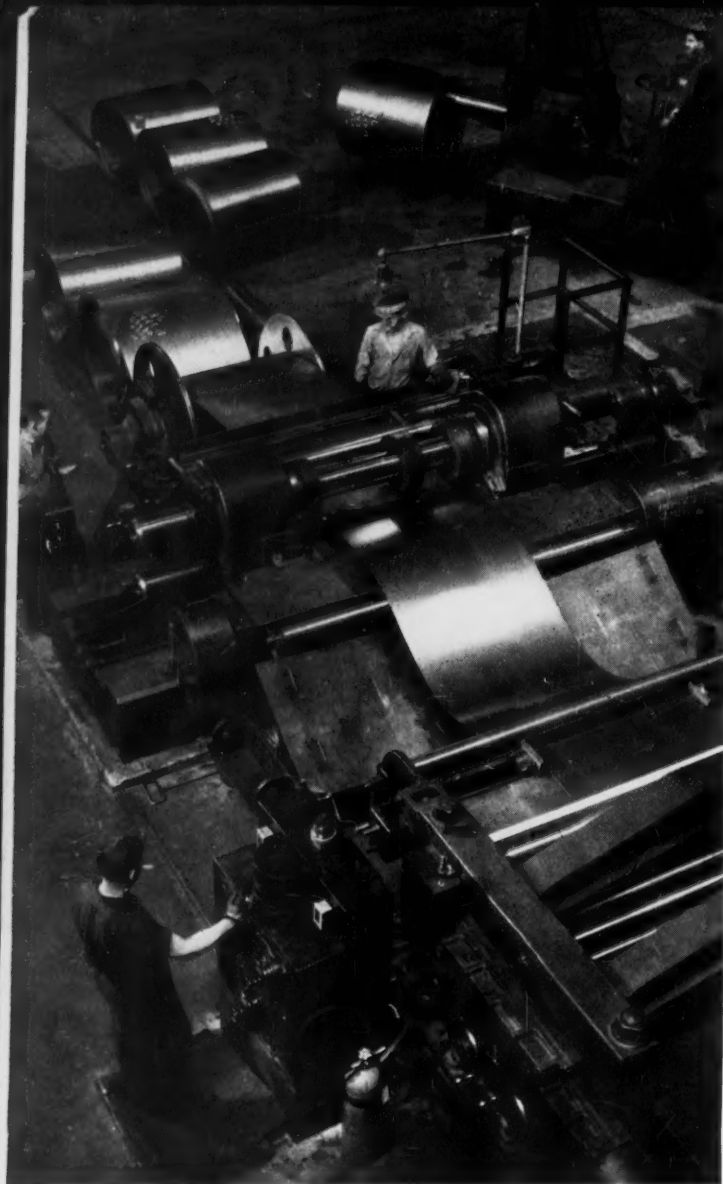
Mill Plans Designed for Safety

When plans were being drawn for the construction of the mill, safety engineers worked side by side with the designers to make certain that: first, the buildings that house the mill would be safe; second, that the mechanical and electrical equipment would be so guarded as to make for absolute safety; and, third, that the general layout of the mill would be such as to facilitate its operation and the handling of material in the safest possible manner. Not only was safety considered in planning the use of the buildings, but also in connection with their construction. Throughout, the safety codes approved by the American Standards Association were consulted, and many were used as the best means of building into the new mill accepted principles of safe practice. For example, in the actual construction work, the American Standard Manual of Accident Prevention in Construction was followed in order to keep the accident toll to a minimum.

Space does not permit mention of all safety equipment, but a few of the unique features of the mill are notable. The strip mill consists of twelve buildings grouped together as one unit which extends for about a half mile along the Monongahela River and covers a site of more than 23 acres. In constructing these buildings all the material used for walls, columns, floors, etc. were required to meet tests for fire resistance provided in the American Standard Specifications for Fire Tests of Building Construction and Materials. The safety of occupants of the buildings was considered in planning the exits. The number, size, and position of stairs, corridors, fire escapes, and doors were planned to provide safety in leaving the buildings, the Building Exits Code being used as the authority on this subject.

Safe Window Cleaning

The buildings are of the saw-tooth type with windows on the high side facing North for the best possible daylight. In order that these windows can be properly and safely cleaned on the inside, metal walkways with railings have been provided the length of each building. Access to these, and all other overhead walkways, is by stairs rather than fixed or temporary ladders. Stairs and walkways are also provided as means of access to gutters on the outside of the buildings, and to the roofs as well.



Good lighting is conducive to safety and helps in producing high-quality material. At this cut-up unit in the Jones & Laughlin Cold Mill Finishing Department the light, measured in foot-candles, is 12.0

compared to workmen performing tasks where part of their minds are occupied with fear of possible injury or even death. However, actual studies show that workmen in a safe plant will produce a better product and greater volume of that product than the same workmen will produce under dangerous working conditions.

The new 96-inch continuous strip mill completed last Fall by Jones & Laughlin was constructed with these facts in mind and the safety factor was considered in all details of the mill and buildings. As a result of this careful planning,



Heavy steel screens such as this protect workmen from flying scale at the delivery end of the slab heating furnaces, also at the scale breaker and first roughing stand

Good lighting is not only conducive to safety, but is an incentive to production of high quality material. In addition to the large windows mentioned, careful consideration was given to the artificial lighting requirements of the various departments where the light, measured in foot candles, is as follows: Hot Mill Finishing, 12.5; Plate Finishing and Shears, 12.2; Blue Annealing, 8.0; Slab Yard Chipping, 30.0; Roll Shop, 9.5; Cold Rolling, 10.8; Cold Mill Finishing, 12.0; and Cold Mill Shipping, 9.1. These figures represent the average light in each department. Special lighting is, of course, provided for certain finishing operations and inspection stations. In general, the American Standards Code of Lighting Factories, Mills, and Other Work Places is used as the reference for the minimum amount of light to be provided.

Overhead electric cranes have always constituted a serious safety hazard, and special attention was given this problem in the building of the Jones & Laughlin strip mill. In the past, many workmen have been permanently injured or killed when

caught between the end trucks of moving cranes and building columns. The safety engineers eliminated this hazard in the strip mill by having the crane track supports designed to provide a minimum clearance of 15 inches between the end trucks and the face of the building columns. This added \$40,000 to the construction cost of the building, but because of the additional measure of safety, it is considered money well spent.

Extra Brakes for More Safety

Characteristic of all strip mills, overhead electric cranes are used here to transport loads weighing as much as 75 tons for distances of several hundred feet. In the past, many loads have fallen because of failure of brakes on the motor shaft, so upon the recommendation of the safety engineers, all cranes in this mill have extra brakes installed on the jack shafts providing additional protection to equipment and workmen.

For the protection of the crane operators, red and green signal lights have been installed on the

outside of the crane cab. When the craneman is in the cab operating the crane, the green light burns, but if he leaves the cab for any reason, the main circuit switch in the cab is locked out and the red light switched on. This red light is an indication to other crane operators that the crane should not be bumped or moved without first ascertaining the whereabouts of the operator. In addition to this safety measure, all crane access platforms are reached by stairways. Full length railed bridge walks, the floors of which are checkered plate, have been provided on each side of all cranes. The electric wiring and equipment for lighting, heating, and power are all installed, of course, according to the provisions of the National Electrical Code.

Control Transformers Protect Workmen from High Voltage

In the effort to have all mechanical and electrical equipment as accident-proof as possible, considerable money has been expended for the installation of safeguards and safety devices throughout the mill. The electrical equipment in the mill is the most modern available, all hazards being carefully considered by the electrical and safety engineers before purchase of any equipment. So well have these engineers done their work that, while practically all the equipment in the mill is electrically operated, there is no location in the entire mill where high voltage is exposed to the average employee. This was accomplished, wherever manual control is necessary in the 440 volt circuits, by installing control transformers which reduce the current to 220 volts at the push buttons. Also when repairs are necessary, the circuits are so arranged that each can be locked open.

All power transformers and starting reactors are insulated by Pyranol instead of oil, which eliminates a fire hazard and at the same time, makes for safer operation. The towers which support the electric cables coming from the power plant have been designed with a partition in the center, making it possible for electricians to work on the dead side of the line without coming in contact with the live circuits.

Mechanical Guards

The mechanical guarding in this mill is practically perfect, there being no moving parts exposed where an employee might be injured, unless he violates regulations and deliberately places himself in a hazardous position. On the roll housings in the hot mill, the pipes to the descaling sprays, which are operated at 1,200 pounds pressure to the square inch, are shielded to protect employees in case of pipe failure, a unique feature

which demonstrates the lengths to which the company has gone to protect its employees. For other hazardous processes or operations, guards are provided in keeping with the requirements of the American Standard Safety Codes for the Protection of the Heads and Eyes of Industrial Workers; for the Use, Care, and Protection of Abrasive Wheels; and for guarding Mechanical Power-Transmission Apparatus.

Sanitary Facilities

Heavy steel screens have been erected at the delivery side of the slab heating furnaces, at the scale breakers and at the first roughing stand to protect employees from flying scale when a slab slides from the furnace or starts through the rolls. The usual guards on all drive units from motors to roll housings have been provided. Well lighted subways under the roll tables make it unnecessary for employees to cross the moving machinery, thus preventing possible accidents. Clean, airy locker rooms, with adequate washing, bathing, and toilet facilities are provided at convenient intervals throughout the mill. The provisions of the American Standard Safety Code for Industrial Sanitation in Manufacturing Establishments have been consulted as the basic, minimum requirements in planning the sanitary equipment of the mill.

Safety Education

The management of Jones & Laughlin, through the Safety Department, has done everything possible with physical equipment to make this mill safe. Realizing that mechanical safeguards, careful planning and expensive safety equipment are not enough if workmen are not safety conscious, the company continues its program of safety education through means of safety discussion classes with the foremen, and also by the use of conspicuous signs, posters, and bulletin boards in the mill. It uses standard methods of compiling statistics to show the reasons for the accidents that do occur and provides information that can be used in eliminating the causes of accidents. For this purpose the American Standard Method of Compiling Industrial Injury Rates and the proposed American Recommended Practice for Compiling Industrial Injury Causes, which show how to compile statistics that can be compared from department to department and from year to year, are especially helpful. The company also holds safety meetings of employees, sponsors safety contests, distributes a safety leaflet from time to time and supplies workmen with printed safety rules applicable to their particular job in the never-ending effort to make safety pay dividends.

ASA Board Elects Breer as Member

CARL BREER, Executive Engineer and member of the Board of Chrysler Corporation, has just become a member of the Board of Directors of the American Standards Association, nominated by the Automobile Manufacturers Association.

Mr. Breer, who has been in charge of the Chrysler Engineering Research Laboratories since the Chrysler Corporation was founded, is also vice-president of the Chrysler Institute of Engineering, and of Airtemp, Inc., an air-conditioning subsidiary of the Chrysler Corporation.

With his partners, Fred M. Zeder and Owen R. Skelton, he has been responsible for the development of such important automotive engineering improvements as hydraulic brakes, floating power, redistribution of weight, modern streamlining, high compression engines, and many other features. Mr. Breer was a co-designer of the first Chrysler automobile built in 1924. Before he was 17 years old and while still a student at Throop Polytechnic Institute of Pasadena, he built one of the first steam cars on the West Coast. This was instrumental in obtaining him employment with the Tourist Automobile Company. Later he worked with the Duro Car Company before entering Leland Stanford University in 1905. He was graduated in 1909 with a Bachelor of Arts degree in Mechanical Engineering.

Following a three-year apprenticeship at Allis Chalmers Company, in 1912 he joined the Moreland Distillate Truck Company in Los Angeles as superintendent of the plant. Two years later he organized and became part owner of the Acme Electrical Auto works where he remained until 1916, when he joined Mr. Zeder to become research engineer for the Studebaker Corporation. In September, 1920, with Mr. Zeder and Mr. Skelton he allied himself with the Willys Corporation in Elizabeth, New Jersey. The Zeder, Skelton and Breer firm of consulting engineers was organized



Carl Breer

the following year and in 1923 transferred its activities to the Maxwell Motor Car Corporation, with Mr. Breer becoming executive engineer. In 1925 he was made executive engineer of the Chrysler Corporation and in 1937 a director.

In addition to the Automobile Manufacturers Association, Mr. Breer is a member of several other organizations which have close contact with the American Standards Association, including the Society of Automotive Engineers and the American Society of Mechanical Engineers.

He is also a member of the National Research Council, American Institute of Physics, Detroit Society of Model Engineers, the Engineering Society of Detroit, Detroit Board of Commerce, and Franklin Institute.

New York Fire Underwriters' Rules Used in Australian Boiler Code

The rules of the National Board of Fire Underwriters of New York, as well as those of the Council of the Fire and Accident Underwriters and the Fire Offices' Committee, London, were used in preparing a proposed revision of the Australian Boiler Code as it relates to oil fuel installations.

The revised rules cover the construction, operation, and maintenance of installations for the storage and application of oil fuel having a closed flash point not less than 150 F.

A copy of the draft standard can be borrowed from the American Standards Association.

A.S.T.M. Issues Revision Of Fuel Oil Specifications

REVISED tentative specifications for fuel oils, providing for five grades of oil instead of six, were issued recently by the American Society for Testing Materials. The old number 4 grade has been eliminated.

Among the changes in methods of testing is the use of a new test for sediment in fuel oil by extraction, based on a method used by the Federal Specifications Board.

Also included in the new standards is an adaptation of the distillation procedure for obtaining 10 per cent residuum for determination of carbon residue in Grades 1 and 2. (Grade 1 covers a distillation oil for use in burners requiring a volatile fuel and Grade 2 covers a distillate oil for use in burners requiring a moderately volatile fuel.)

A number of modifications have been made in the detailed requirements for oil. The maximum flash point for No. 1 has been raised to 165 deg F instead of 150 deg, and for No. 3 grade the maximum is 230 deg F instead of 200 deg F. The minimum flash point for No. 5 grade, a medium viscosity fuel, is now 130 or legal in place of the former 150. Grade No. 3, a low viscosity fuel, has a new maximum pour point of 20 instead of 15.

The maximum carbon residue requirements for Grade No. 1 is 0.05 per cent on 10 per cent residuum but this can be increased to a maximum

of 0.12 per cent when the oil is to be used in other than sleeve-type blue-flame burners. The limit may be specified by mutual agreement between the purchaser and the seller. For Grade 2, the 0.25 maximum on 10 per cent residuum can be reduced to 0.15 per cent to meet certain burner requirements.

The new A.S.T.M. tentative specifications are the same as the latest edition of the Commercial Standard for Fuel Oils, CS 12-38. These fuel oil specifications were first issued as Commercial Standard in 1929 and revised in 1932 and 1934. In connection with the 1934 revision, arrangements were made to coordinate the work of technical committees of A.S.T.M. Committee D-2 with the program of the Division of Trade Standards of the National Bureau of Standards. The A.S.T.M. first issued tentative specifications for fuel oil in 1934. The cooperative arrangements effective in that year have been continued for this latest revision.

The new test for sediment in fuel oil by extraction given in the new tentative specifications is included in the Commercial Standard and has also been published separately by the A.S.T.M. as a tentative standard.

The A.S.T.M. tentative specifications for fuel oil, D 396-38 T, and the new test method for sediment in fuel oil, D 473-38 T, may be obtained from the American Society for Testing Materials, 260 So. Broad Street, Philadelphia, at 25 cents each. The Commercial Standard, CS 12-38, may be obtained from the Superintendent of Documents, Washington, D. C., at five cents.

Outdoor Advertising Association Becomes ASA Member-Body

Indicating its interest in the program for development of national standards, the Outdoor Advertising Association of America, Inc., has just become a Member-Body of the American Standards Association. The Association includes in its membership the local and regional associations of outdoor advertisers which in their turn include all of the large companies in the field and a large proportion of the smaller companies.

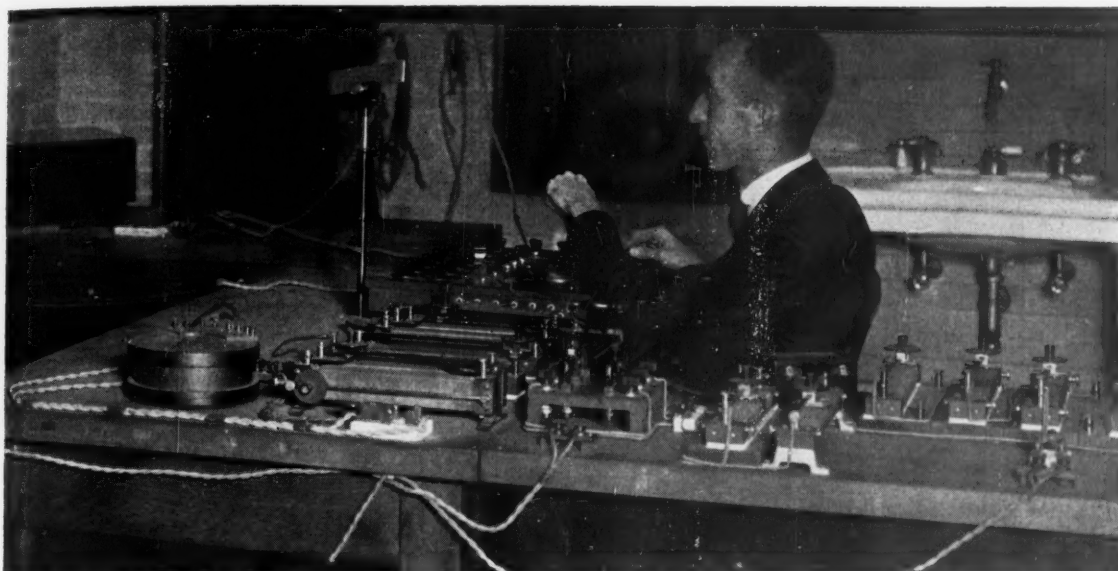
Although its interest in the ASA's program is in the building code and consumer goods fields particularly, the Association will have a voice in determining the general standardization policies of the ASA.

The Outdoor Advertising Association of America has had standards for outdoor advertising structures of various types for more than 15 years. The Building Code Correlating Committee of the

ASA is now considering a project in this field on Building Code Requirements for Signs and Billboards in which the Association has indicated its interest.

American Standard to Guide Canadian Committee on Poles

The Canadian Engineering Standards Association committee on Wood Poles has decided that the proposed Canadian standards for poles should closely follow the standards approved by the American Standards Association. The committee will, however, also study any pole specifications issued by the British Standards Institution. The Forest Products Laboratories is being asked to assemble data on tests made on Canadian timber for consideration by the committee.



The Magnetic Testing Laboratory of the National Bureau of Standards

Standard Test Methods Check Magnetic Properties of Materials

by

Raymond L. Sanford¹

*Secretary, A.S.T.M. Committee A-6
on Magnetic Properties*

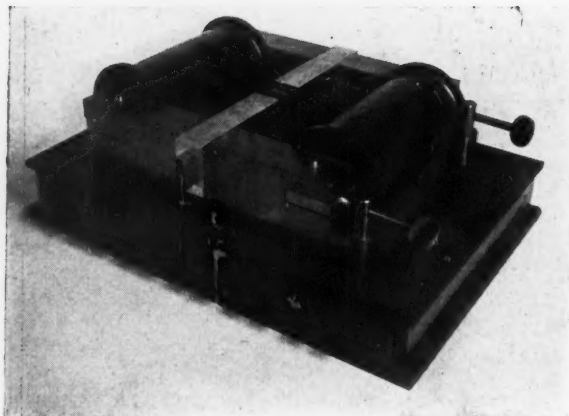
National Bureau of Standards Uses A.S.T.M. Standard for Testing Magnetic Materials; A.S.T.M. Committee Develops New Methods for New Materials

PRACTICALLY every application of electricity involves the use of some type of magnetic material. Most of the materials thus used are purchased on the basis of specifications or guarantees as to their magnetic properties. In view of the varied requirements and continual improvement in quality, particularly in recent years, it has not been feasible to set up standard specifications for the materials themselves which

would be generally applicable. It has been found, however, that standardization of testing methods is of definite advantage and standardized methods have been generally adopted.

The standards relating to magnetic testing most generally accepted by industry are those promulgated by the American Society for Testing Materials. The responsibility for developing these standards rests with Committee A-6 on Magnetic Properties which is composed of representatives of the principal producers and consumers of magnetic materials together with a few individuals

¹Chief, Magnetic Measurements Section, National Bureau of Standards.



Magnetic permeameter used by the National Bureau of Standards in carrying out its tests

whose interest is of a more general nature. Numbered among the so-called "general interests" is the National Bureau of Standards. The Bureau is interested not only from the point of view of promoting accuracy and uniformity in testing practice, but also because it is often called upon to make tests in accordance with A.S.T.M. specifications, usually for the purpose of checking results obtained in other laboratories.

The first A.S.T.M. standard relating to methods of test for magnetic properties of iron and steel (A34-11) was adopted August 21, 1911. Since that date numerous revisions have been made in order to meet the needs brought about by technical advances both in materials and testing apparatus. In the first standard, only one method was listed for the determination of normal induction and hysteresis, and one for core loss. Experience in the use of the standard has led to many minor changes in the specifications, relating mainly to the conditions of test, standard test data, and the like.

In 1924, the standards were modified to permit the use of any permeameter giving results accurate within specified limits, but in 1927 the policy was changed and a list of approved methods was given, the conditions under which each method could be used were specified, and the probable accuracy was indicated. This plan has been followed up to the present time, new methods or apparatus being added to the list when found by experiment to meet the proper requirements. In some instances new instruments have been developed independently by individuals; in others it has been necessary for the committee to un-

dertake the development of new methods to fulfill certain needs not met by existing instruments.

As an instance of changing requirements brought about by improvements in magnetic materials, alloys for permanent magnets may be cited. The method for the determination of normal induction and hysteresis specified in the 1911 standard has an upper limit in magnetizing force of 300 oersteds. This was ample for all types of magnet steel until 1920 when cobalt magnet steels came on the market. These steels are magnetically harder and require higher magnetizing forces both for magnetizing and testing. It became necessary, therefore, to investigate methods capable of testing at a maximum magnetizing force of 1000 oersteds. The original standard method could not be operated at this high magnetizing force, primarily because of excessive heating of the magnetizing coils. In the course of time, instruments were developed which gave satisfactory results at the higher magnetizing forces and four new ones were added to the list of approved instruments between 1927 and 1933.

In 1932, alloys of the aluminum-nickel-iron type, such as Alnico and other similar materials, made their appearance. As these alloys require magnetizing forces considerably in excess of 1000 oersteds, new testing methods were again required. In 1936 two methods, one having an upper limit of about 2500 oersteds and one good up to 400 oersteds, were accepted and added to the list. The committee is still engaged in investigating methods for measurements at high values of magnetizing force and further revisions of the standard will probably result from this investigation.

Substantial Improvements

Substantial improvements have been made, not only in permanent magnet materials but also in materials that are magnetically soft. The discovery of the remarkable alloy of nickel and iron known as permalloy led to the development of several new materials having permeabilities hitherto unattainable. The technique of testing materials of this type is not the same as that used in testing the magnetically hard materials, and problems of an entirely different nature are encountered. Methods for measuring a-c permeability and core loss at very low values of induction were adopted in 1928 and revised in 1933. Still further modifications are now being considered.

Standardization necessarily lags somewhat behind technological progress in the development of new materials and their applications but Committee A-6, composed as it is of members intimately associated with this development, is in a very favorable position to keep this lag as small

as possible. The general adoption of the standards developed by this committee and promulgated by the American Society for Testing Materials has resulted in reducing to a minimum dis-

agreement and misunderstanding between producers and consumers of magnetic materials and in bringing about substantial improvements in the accuracy of commercial magnetic testing methods.

New Handbook Gives Information On Recognized Safety Standards

Generally recognized industrial safety requirements have been compiled by the National Conservation Bureau in a *Handbook of Industrial Safety Standards*. The material included is drawn wherever possible from safety codes approved as national standards by the American Standards Association, or from safety standards adopted by other organizations such as the American Society of Mechanical Engineers.

The *Handbook* covers only the more important items in the field of industrial safety, and those items that are included are covered in an abridged form. However, it furnishes a comprehensive working document helpful in determining what safety standards are available.

A list of pertinent safety codes has been included as an appendix, with information as to how they may be obtained. As a further guide, there has been included at the end of certain sections a reference list naming the safety codes which are especially applicable to the subject matter of that section.

Such subjects as first aid and hospital, house-keeping and storage of materials, sanitation, illumination, building exits, identification of piping, moving parts of machines, elevators, and guards for different classes of machines are covered in the 32 sections of the *Handbook*.

Copies of the *Handbook of Industrial Safety Standards* are available without charge from the National Conservation Bureau, New York.

Emergency Lighting Assured With New British Standard

In many places of public entertainment, hospitals, and other such buildings it is essential that there should never be a complete failure of light. In order to prevent this, emergency lighting systems are frequently installed using a switch to change over the whole or part of a main supply to a battery if the main supply fails. Because such a system is dependent on the reliability of the switch used, the new British Standard Specification for Automatic Change-Over Switches and

Contactors for emergency lighting gives special attention to the design and construction of this switch and operating coils to insure reliable operation.

The standard also includes methods of tests, and temperature measurements.

Copies of the standard, B. S. S. 764-1937, may be ordered through the American Standards Association.

New ASA Year Book

The new American Standards Year Book, 1938, is now off the press and available to ASA members. The Year Book gives the complete list of standardization projects, whether completed or still under development, with the names of officers and members of active committees working on standards.

In addition to the names of members of working committees, as well as the Board of Directors, Standards Council, Member Bodies, correlating committees, and other official committees, the book includes a section about the American Standards Association in general, telling how standards are developed, how the ASA is organized, how it cooperates both nationally and internationally, and a general answer to the question, "Why Standardize — And When?"

An explanation of how companies can become members and what privileges and duties each type of membership entails is also included.

The Constitution, Procedure, and official statement of the basic principles underlying ASA work are given in full.

This 1938 edition is the first American Standards Year Book issued since 1933.

Copies are available without charge to anyone interested.

Industry Asks ASA to Name Argentine Representative

AMERICAN business would be in a stronger position in the Argentine if it had the assistance of an engineer in Buenos Aires to help develop the understanding and use of American industrial standards, representatives of 24 large companies, associations, and technical societies agreed at an informal conference June 28. The American Standards Association was asked by the conference to arrange for a full-time representative in Buenos Aires, the expenses of such a representative to be paid by those companies having a direct interest in Argentine business.

The June 28 conference was called by the American Standards Association, with the cooperation of the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce and the National Foreign Trade Council, following recommendations from the U. S. Chamber of Commerce in Argentina and several American industrial organizations.

It was explained that although the closest possible cooperation has been maintained between the American Chamber of Commerce in Buenos Aires and the American Standards Association, American industry has found itself at a disadvantage in competing with German and British industry. The British Standards Institution already has a full-time representative in Buenos Aires and German commercial representatives are actively promoting the use of German standards.

To help American industry in promoting the use of standards and specifications adopted in the United States, and particularly American Standards approved by the American Standards Association, the ASA and the American Chamber of Commerce have presented a complete set of American Standards to the Instituto Argentino de Racionalizacion de Materiales, the Argentine national standardizing body. The ASA has also corresponded with the American committee of the U. S. Chamber of Commerce in Argentina to help

as much as possible in its efforts on behalf of American industry. This long-distance contact has not proved effective, however, and requests received from the U. S. Steel Products Company, the Republic Steel Company, as well as from the U. S. Chamber of Commerce in Argentina suggesting the possibility of a representative in Buenos Aires, resulted in the informal conference of leading industrial organizations called by the ASA to find out from American business its opinion of this suggestion.

Without a dissenting vote, the conference declared itself in favor of such a move.

The recommendations of the conference have been brought to the attention of a special committee appointed by the ASA Board of Directors. R. E. Zimmerman, U. S. Steel Corporation, representing the American Iron and Steel Institute, is chairman of the committee. The other members are:

L. J. Briggs, Director, National Bureau of Standards, U. S. Department of Commerce

C. L. Collens, President, Reliance Electric and Manufacturing Company, National Electrical Manufacturers Association

Howard Coonley, Chairman of the Board, Walworth Company, Past-President, American Standards Association

After the special committee has made its recommendations, the Board of Directors will decide whether, in carrying out the object of the ASA as stated in its Constitution, "to promote a knowledge of, and the use of, approved American industrial and engineering standards, both in the United States and in foreign countries," the ASA should name an Argentine representative as recommended by the conference.

The ASA will be glad to hear from any organizations which have an interest in trade with the Argentine in order that it may have a more complete record of industry's opinion of the proposed action.

N.E.M.A. Shows How Standardization Pays

"Standardization Pays" is the title of a new pamphlet now being distributed by the National Electrical Manufacturers Association.

Motors, lamp holders, snap switches and attachment plugs, fuses, transformers, switchgear, and refrigerators are cited as examples of specific elec-

trical products which have benefitted from standardization.

General benefits gained by electrical manufacturers from standardization are shown to be: simplification of stock requirements, savings in purchasing, shorter delivery time, uniform rate of production, lower production costs.

The pamphlet is a reprint of an article published in *Electrical Manufacturing*, May.

New Standards to Insure Performance Of Electrical Indicating Instruments

by

E. J. Rutan¹

*Chairman, Sectional Committee on
Electrical Measuring Instruments (C39)*

STANDARDS for electrical indicating instruments to insure the possibility of obtaining quality instruments of known performance and operating characteristics within the range of present-day American manufacturing limits have just been completed by a representative committee and approved by the American Standards Association. In preparing the standards, the committee made every effort to set up performance limits to insure that the product would be commercially practicable and at the same time of utmost quality for the particular grade.

The standards apply to indicating electrical instruments (instruments in which the present value of the quantity under observation is indicated by the position of a pointer relative to a scale) for direct current and for alternating current of frequencies between 15 and 60 cycles per second. Ammeters, voltmeters, wattmeters, frequency meters, synchroscopes, microfaradimeters, and ohmmeters are some of the types of instruments covered. The standard does not cover indicating instruments provided with arrangements for curve drawing, contact making, etc. or small instruments of types and sizes which are used where low cost is essential.

The new standards include a very complete set of definitions of all terms relating to indicating instruments. In the preparation of the definitions, use was made wherever possible of definitions already approved by the American Standards Association. New definitions were used only for the terms not already taken care of. In this respect these standards depart considerably from

the proposed international standards for indicating electrical measuring instruments prepared by the International Electrotechnical Commission in 1935 and considered by the committee in preparing its recommendations.

In classifying electrical indicating instruments in the American Standard the three regularly accepted American classes are used: portable instruments, switchboard instruments, and laboratory standards.

Portable instruments are separated into two classes, A and B, based on performance. A similar arrangement is made for switchboard instruments, providing two classes, one of scale lengths under $4\frac{1}{2}$ inches and the other of scale lengths over $4\frac{1}{2}$ inches. Laboratory standards are considered a special type and no performance specifications are given, it being understood in general that they should be better than Grade A portable instruments.

In addition to the initial accuracy requirements,

Checking a portable alternating-current ammeter against a laboratory standard alternating-current ammeter

Courtesy Consolidated Edison Co.



¹New York Edison Company, New York.



Courtesy Consolidated Edison Co.

Calibrating a portable, d-c millivoltmeter and shunt against a Leeds and Northrup combination shunt and deflection galvanometer

these standards also specify other performance characteristics such as influence of temperature due to the instrument self-heating, external temperature influence, voltage influence, frequency influence, power factor influence, and external field influence. These standards also place considerable emphasis on insulation resistance as a mark of quality in construction rather than relying entirely on dielectric strength. The dielectric

strength test is confined to switchboard instruments because these instruments are more frequently used with instrument transformers and are subject to less maintenance and inspection. Portable instruments in general are not likely to be subjected to over potentials and are usually in insulating cases, making the dielectric strength test of less importance.

Work on the new standards was started in 1933,

Representative Committee Prepared New Standard

Agreement on the provisions of the new American Standard Specifications for Electrical Indicating Instruments was reached by a committee representing manufacturers, users, and technical experts before the standard was submitted to the American Standards Association for approval. The committee worked under the administrative supervision of the Electrical Standards Committee of the American Standards Association. Officers and members of the committee are:

E. J. Rutan, American Institute of Electrical Engineers and Electric Light and Power Group, *Chairman*

H. C. Koenig, Electric Light and Power Group, *Secretary*

American Institute of Electrical Engineers, *W. B. Kouwenhoven*, *E. S. Lee*, *E. J. Rutan*
American Society for Testing Materials, *Gordon Thompson*

Association of American Railroads, Engineering Division, Electrical Section, *C. J. McCarthy*
Electric Light and Power Group, *H. C. Koenig*, *H. R. Richardson*, *E. J. Rutan*, *J. O'R. Coleman* (*alt.*)

Institute of Radio Engineers, *Dr. F. H. Drake*
National Electrical Manufacturers Association, *G. L. Crosby*, *W. N. Goodwin, Jr.*, *W. H. Pratt*, *H. P. Sparkes*, *I. E. Hall* (*alt.*), *B. R. Hill* (*alt.*)
Radio Manufacturers Association, *John Miller*, *P. K. McElroy* (*alt.*)

Scientific Apparatus Makers of America, *E. D. Doyle*

Telephone Group, *R. L. Young*
U. S. Department of Commerce, National Bureau of Standards, *H. B. Brooks*

U. S. Navy Department, Bureau of Engineering, Specifications Section, Design Division, *Officer in Charge*

when a sectional committee under the procedure of the American Standards Association was organized. This committee was made up of representative engineers from various technical, manufacturing, and general organizations. The committee consists of nine members representing producers, and three representing general interests such as the National Bureau of Standards and universities.

Before approval of the standards, several drafts were prepared based on a 1933 revision of Standard No. 33 of the American Institute of Electrical Engineers, a standard of the National Electrical

Manufacturers Association, and the standards issued by the Navy Department 17-I-12-1929. In 1935 during the preparation of the standards, the International Electrotechnical Commission issued proposed standards for electrical measuring instruments, which were also considered by the sectional committee.

The American Standard Specifications for Electrical Indicating Instruments (C39.1-1938) are now being printed and copies may be ordered from the American Standards Association at 40 cents each.

Copper, Brass Products Association Is New Member-Body of ASA

The Copper and Brass Mill Products Association, trade association for that industry, has joined the American Standards Association as a Member-Body, and has named T. E. Veltfort, secretary, as its representative on the Standards Council.

The Association has a special interest in standardization through its Committee on Standardization, which has already prepared tentative dimensional standards for tubing, rods, and other products. This committee is also considering the use of standards which have been approved as American Standards, and others developed by the American Society for Testing Materials, it is reported. Its standards will be used for production control and also as a guide to consumers concerning the nature of the products which can be purchased from the members of the Association.

As a Member-Body of the American Standards Association the Copper and Brass Mill Products Association will have a voice in the approval of national standards and in deciding the standardization policies of the ASA.

tests. A committee has been appointed to make the necessary arrangements for the tests.

The committee has agreed to recommend 87½ lb as the standard net weight per bag.

Ask Comments on Revised Standard For Cut and Ground Thread Taps

A revised edition of the American Standard for Taps, Cut and Ground Threads (B5e-1930) is now being circulated for suggestions and comment. Any suggestions received will be considered before the final revision is submitted to the sponsor organizations and to the American Standards Association.

Copies of the revision may be borrowed from the American Standards Association or from the American Society of Mechanical Engineers.

Comments on the proposed standard should be sent to C. M. Pond, chairman of Technical Committee 12 on Cut and Ground Thread Taps, care of the American Society of Mechanical Engineers, 29 West 39th Street, New York.

Canadian Portland Cement Standard May Follow A.S.T.M. Requirements

Changes in the Canadian standard on Portland cement, in line with revisions in the standard on the same subject adopted by the American Society for Testing Materials, are being considered by a committee of the Canadian Engineering Standards Association. Canadian members on the A.S.T.M. committee have been appointed by the C.E.S.A. as members of the Canadian committee.

The Canadian recommendations include raising the requirements for tensile strength, and lengthening the time limit for initial set. After the suggestion to include a three-day tensile test was discussed, it was decided to undertake preliminary

Standardization — Factor In All Phases of Modern Life

"From a function of elemental engineering, standardization has expanded into a factor affecting the primary supplier, the engineer, the manufacturer, the seller, the buyer, the financier, the user, the servicer—in fact, practically all who handle or use automotive products. It is a factor in labor relations, legislation, and regulation, and is woven into practically all the elements of modern life."—C. W. Spicer, President, Society of Automotive Engineers.

Cooperation Brings Results¹

State Administrators find they advance cause of uniform motor regulations by working together

by

Arthur Magee

*Commissioner of Motor Vehicles
State of New Jersey*

IN motor vehicle regulation, the cry for years has been one of uniformity in legislation. That cry is based upon the fact that the automobile knows no boundaries. State lines fly under its wheels at a rate of 60 miles an hour, or faster, with never an intimation to the traveler that he is accomplishing something that was inconceivable in his father's or grandfather's day.

But, as some long forgotten philosopher pointed out, "all coins have two faces". Opposite the glittering face of the social and economic significance represented by such enormous freedom of movement is the dark face of tragedy represented in the staggering cost in life and wholeness due to the automobile accident. We go without restraint, but we kill and maim as we go.

It was fourteen years ago that the first National Conference on Street and Highway Safety was called in Washington.

Fourteen years is a long time—time enough one might think to accomplish the uniformity of regulation which was the principle concern of the first conference. The fact remains, however, that for all its desirability, which is frankly admitted by everyone, we do not have uniform regulations governing the movement of traffic.

There are a number of explanations for this situation; a situation, it should be said, which is vastly improved as to uniformity over that which existed when the subject first was broached. One of them is that conditions are vastly different in various parts of the country. What seems feasible in the densely populated areas of the industrial

east seems less so for the areas of magnificent distances in the middle west and other sections.

We now see that the original program was somewhat too vast. We now see that the hope for uniformity lies in handling it on a sectional basis; that is to say, dealing with it from the standpoint of standardizing legislation and regulation throughout areas where similarities of population, geography, industrialization and social psychology exist. As a case in point, New Jersey and Texas may never standardize their motor vehicle regulations and enforcement procedures without terrific repercussions. But it would be tragic to think that New York, Connecticut, and New Jersey might remain similarly far apart in their traffic handling policies and methods. They will not do so, of course.

In the effort to achieve uniformity, even on a sectional basis, we constantly are stymied by the torpor of legislative processes. In the main, it is perhaps well that legislative bodies move with deliberation.

The fact remains, however, that the automobile on numerous occasions has moved much too fast for the law. The results of this circumstance

¹Abstract of address before the Ninth Annual Convention of the Greater New York Safety Council, April 19-21, 1938.

might have been more serious were it not that cooperation stepped in and saved the day.

In the motor vehicle administrative work, we State officials do have our differences of opinion. But, up against one of the most difficult phases of being good public servants, we do have ways of getting together if only because at times we have no one but ourselves to turn to.

It would be vain to deny, for instance, that we have had our acrimonious moments—which got into the papers on the first page—over which State should collect registration fees from certain classes of interstate vehicles. New York and New Jersey and Pennsylvania have had some pretty heated struggles on that score. In fact, at times, we have sounded like so many Balkan countries instead of States belonging to a single Union.

But those things, and the spirit behind them, are alien to what I am talking about. They are insignificant in comparison with the kind of cooperation that, say, produces uniform agreements as to what kind of headlights shall be permitted in the several States contiguous to New York. When legislation fails us on a point such as this, one affecting all motorists, we have cooperation upon which to progress until the law can catch up.

To amplify that statement, which relates to a phase of motor vehicle administration that is typical—and which should be more typical—I refer to a situation which existed several years ago. At the time, there were regulations on the statute books of numerous States which set the limit of headlight power at 21-candlepower. It was obvious to illuminating engineers that lamps of that limit were inadequate to the task of lighting the way of cars which had been considerably increased in speed. Fifty thousand candlepower of light was needed, but the law said "no."

Motor vehicle administrators, those of the East, that is, did not feel the same way. They got together and achieved instantaneous results in accepting the new and stronger lights and then permitting the law to catch up with them as rapidly as it could.

Reciprocal Agreements Effective

The motor vehicle or traffic administrator, as an advocate of law obedience, would not be in a position to act in this fashion were he acting alone. In concert, or cooperation, with his fellow workers in other States, he can give his procedure of this kind a validity it would not have otherwise.

We can in this work do so much by reciprocal agreements that merely need behind them the demonstrated force of wisdom and rightness and not necessarily the force of the law. The motor manufacturing industry recognizes this fact. It has demonstrated a great willingness to work in full coop-

eration and harmony with the motor vehicle administrators in recent years.

In this connection, I recall the appearance of the phenomenon of free-wheeling, certainly you all must remember free-wheeling, which appeared several years ago. Free-wheeling excited the motor manufacturers very much. It also excited the motor vehicle administrators very much, but

Highway, Traffic Experts Named On New ASA Highway Committee

To make cooperation on the problem of highway standards more effective, a new committee on highway traffic, authorized recently by the American Standards Association, is now being organized. The committee will bring together representatives of automobile manufacturers, state traffic administrators, traffic experts, etc., to advise the ASA on standardization questions connected with motor traffic and highway problems.

Organizations that have already named representatives on the new Highway Traffic Standards Committee are:

American Association of Motor Vehicle Administrators, *Louis R. Morony, Charles Harnett (alt.)*
 American Transit Association, *K. M. Hoover, Hawley S. Simpson (alt.)*
 American Trucking Associations, Inc., *Charles G. Morgan, Jr.*
 Bureau for Street Traffic Research, Yale University, *Maxwell N. Halsey (alt.), Dr. Miller McClintock*
 International Association of Chiefs of Police, *F. M. Kreml*
 National Association of Motor Bus Operators, *Dwight McCracken, A. W. Koehler (alt.), A. T. Warner*
 National Association of Railroads & Utilities Commissioners, *Richmond B. Keech*
 National Conservation Bureau, *Holger Jensen*

Other organizations invited to become members of the committee but which have not as yet named representatives include the American Association of State Highway Officials, American Automobile Association, Automobile Manufacturers Association, Interstate Commerce Commission—Bureau of Motor Carriers, Institute of Traffic Engineers, National Association of Mutual Casualty Companies, U. S. Department of Agriculture—Bureau of Public Roads, U. S. Department of Commerce—National Bureau of Standards.

in a different way. In the first case, the excitement had to do with its effect in increasing sales. In the second, it was concerned with its effect in increasing accidents.

Did either group, from the standpoint of their different kinds of excitement over the phenomenon jump to the conclusion that there ought to be a law—reputedly the first thought of every American?

They did not. Free-wheeling was disposed of to the satisfaction of everyone concerned through reciprocal agreements between the States as to how it ought to be controlled. Everyone was very happy.

I cite that experience here because it is typical of the force of reciprocal agreements. There are so many developments in this rapidly developing field which can be handled in this fashion, not all of them by any means concerned with motor vehicle design.

When I consider cooperation among this group, I do not consider us to be a little group huddling against the cosmic chill. On the contrary I regard cooperation as the means of doing a more effective and aggressive job. It makes it possible for safety to be promoted on a front as vast as the area of the whole Northern Hemisphere. In the idiom of the day, we go places faster when we go together.

Delbridge Named President, Barr Vice-President of A.S.T.M.

T. G. Delbridge, manager, Research and Development Department, The Atlantic Refining Company, Philadelphia, was elected president of the American Society for Testing Materials, it was announced at the A.S.T.M. Annual Meeting, June 27. W. M. Barr, chief Chemical and Metallurgical Engineer, Union Pacific Railroad Company, was elected vice-president.

Dr. Delbridge, who has just completed a term as A.S.T.M. vice-president, has been vice-chairman of Committee D-2 on Petroleum Products and Lubricants since 1930. For six years he was a member of the A.S.T.M. Committee E-10 on Standards. He is an A.S.T.M. representative on the Sectional Committee on Petroleum Products and Lubricants and the Sectional Committee on Valid Certification, operating under the procedure of the American Standards Association.

Dr. Barr has been active in the work of A.S.T.M. Committee A-1 on Steel for a number of years and is a member of A-2 on Wrought Iron and D-1 on Paint, Varnish, Lacquer, and Related Products. He was a member of the A.S.T.M. Executive Committee from 1934 to 1936.

all concerned will assist to avoid misunderstanding and subsequent conflict between the various interests. The net result will be to establish a degree of orderly marketing, stable and sound trade which will be equally to the advantage of purchasers, distributors, and users."

Copies of the standard may be borrowed from the American Standards Association, or ordered through the ASA office.

Weights and Measures Conference To Study Packaged Food Standards

The National Conference on Weights and Measures at its Twenty-Eighth National Conference, May 31-June 3, voted to study the question of mandatory standardization of packaged food products to determine whether such standardization would be feasible. The conference also adopted certain changes in the codes of specifications and tolerances for vehicle tanks, liquid-measuring devices, and scales.

Dr. Lyman J. Briggs, Director of the National Bureau of Standards, was re-elected president of the Conference for the coming year. F. S. Holbrook, National Bureau of Standards, was re-elected secretary, and George F. Austin, Jr., supervising inspector, City Bureau of Weights and Measures, Detroit, treasurer. Vice-presidents elected for the coming year are: W. S. Bussey, chief, State Division of Weights and Measures, Austin, Texas; Rollin E. Meek, chief, State Bureau of Weights and Measures, Indianapolis; Charles C. Read, State Superintendent of Weights and Measures, Trenton, N. J.; C. E. Tucker, chief, State Division of Weights and Measures, Sacramento, Calif.; B. W. Raglund, chief, City Bureau of Weights and Measures, Richmond, Va.; Howard E. Crawford, City Inspector of Weights and Measures, Jacksonville, Florida.

New Zealand Issues Standard for Hides

The New Zealand Standards Institute announces publication of its new Standard Specification for the Treatment, Grading and Classification of Hides, Yearlings, and Calfskins (N.Z.S.S. 161).

"The standard is designed to establish uniform grades as a basis of trade that will have a common meaning to buyers and sellers with the Dominion and overseas," the Institute says. "Good faith in adhering to the provisions on the part of

Per Cent of Shrinkage Must Show On Labels, Trade Commission Rules

THE percentage of shrinkage remaining in woven cotton yard goods shall be marked on any labels which indicate that the goods has been "pre-shrunk," new trade practice rules promulgated June 30 by the Federal Trade Commission require.

The Commission's action was taken as the result of demands from consumers over a period of several years for some method to tell whether material used for making a dress will keep its size or whether the dress must be designed a size or so large to allow for the shrinkage remaining in the material. Buyers have found in the past that although a material may have gone through a pre-shrinking process and may be labeled "Pre-Shrunk" the process may in fact have stretched the goods instead of shrinking it. The new trade practice rules are expected to prevent the use of "Pre-shrunk" labels on such materials.

The use of terms such as "Full Shrunk," "Pre-shrunk," "Shrinkproof," "Will not Shrink," "Non-Shrinkable" are branded by the Commission as unfair trade practice unless the goods so labeled are in fact shrinkproof or non-shrinkable. The use of any word which may mislead purchasers into believing that the goods have been shrunk more than is actually the fact, or that the shrinkage remaining in the material is less than is actually the case, is to be considered unfair. Whenever the material has gone through a shrinking process but still retains a certain amount of residual shrinkage, the terms "Pre-shrunk," or "Shrunk," may be used but always with a statement to the effect that a certain percentage of shrinkage remains in the cloth. The percentage designations must be firmly affixed to the material in a size of type that is conspicuous and legible, and must also appear on invoices, labels, or advertisements which refer to the shrinkage of the goods.

Standard Test

In order that there can be no doubt as to what the shrinkage actually is, a standard test which may be applied in all cases is recommended. The test described in Commercial Standard CS 59-36, promulgated by the National Bureau of Standards, was chosen by the Commission as the standard.

In effect, the new rules outline the same requirements as those included in the proposed American Standard which was not approved by the American Standards Association in 1937 because a consensus of all groups concerned could not be obtained. Minor differences in detail do not change the fact that the results which had been hoped for from the use of the standard and those which are expected to result from the action of the Federal Trade Commission are the same, or that the principles applied in both cases are identical.

Proposed American Standard

The standard submitted to the ASA Standards Council in 1937 was proposed to the ASA by the Textile Shrinkage Conference of the New York Board of Trade in 1933. Some 14 groups, representing manufacturers of cloth and garments, distributing groups, consumers, and governmental agencies, accepted its provisions. The National Association of Finishers of Textile Fabrics, however, which is recognized by all groups interested in shrinkage as the main producing group, refused to accept the standard. Because of the failure of this important group to accept the provisions of the standard, the American Standards Association found it necessary to refuse its approval on the ground that no consensus of the groups concerned had been reached. The point of view held by the finishers for several years during the discussions under ASA auspices was changed, however, at the Federal Trade Commission's hearing in January when the finishers presented recommendations to the Commission which indicated this changed point of view.

Canadian Standards Association Cooperates in Building Code Work

The Canadian Engineering Standards Association is cooperating on a committee preparing a National Building Code for Canada. C. S. L. Hertzberg, Consulting Engineer, is the Association's representative.

Three committees have already been appointed to work on construction, fire protection, and health and sanitation.

Standard Lions?

The Information Service of the American Standards Association is never surprised at the variety of questions it receives. Whether an ASA member wants to know the standard weight of a piece of carbon paper, or wants the complete list of Italian standards on steel pipe, or even if he wants to know what size cage is standard for housing large animals, the ASA Information Service finds an answer for him.

The answer to the one about cages for large animals turned out to be somewhat indefinite. If an ASA member has a lion or bear he wishes to house in a standard cage he might follow the practice of the Ringling Brothers-Barnum and Bailey Circus, which says: "Our cages are subject to the sizes of the animals for which they are built." Or he might prefer the advice of the City of Milwaukee: "Cages of large carnivores, such as lions, or bears, vary a great deal according to the experience of zoo directors and the funds available for construction."

At any rate, whatever the question, the Information Service of the American Standards Association does give an answer!

Propose Simplification For Wooden Box Dimensions

A proposed simplified practice recommendation covering inside dimensions of wooden boxes for use in shipping canned fruits and vegetables has been mailed to the box manufacturers, canners, food distributors, carriers, and others interested, by the Division of Simplified Practice, National Bureau of Standards, for consideration and acceptance.

This recommendation, proposed by the National Wooden Box Association, is based on the number and arrangement of cans per box and conforms to Simplified Practice Recommendation R155-37, Cans for Fruits and Vegetables (Names and Dimensions). The proposal lists the inside dimensions of 29 boxes recommended as standards.

Copies of the recommendation may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Australian, British Standards Available to ASA Members

For the use of ASA members, the American Standards Association keeps a file of foreign and domestic standards which may be borrowed or ordered.

The British Standard Institution and the Standards Association of Australia have just sent in the following new and revised standards:

Australian

New

Carbon steel plates for boilers, B.58-1937
Carbon steel plates for general engineering purposes, A.33-1937
Concrete drainage pipes—Precast, A.35-1937
Electric soldering irons, C.114-1937.P.
Galvanized (zinc-coated) hexagonal mesh steel wire netting, N.2-1938
Platforms, gangways, stairs, and ladders, CA.10-1938
Plugs and plug sockets, C.112-1937.P.
Towels and towelling for hospitals and kindred institutions, 10-Parl-Section 7
Wall switches, C.113-1937.P.

Revised

Lift code (amending and redating the 1935 issue), CA.3-1937
Portland cement and rapid hardening cement (amending and redating the 1937 issue), A.2-1938
Railway permanent way materials (superseding 1928 issue as amended 1932 and 1935), E.22 to E.29-1938
Voltages and frequencies for electrical systems and installations, C.1 (a and b) 1938

British

New

Fully automatic oil-burning equipment for central heating and hot water supply, 799-1938
Galvanized corrugated steel sheets (primarily for use in the home market), 798-1938
Lead and lead alloys for cable sheathing (suitable for all types of metal sheathed cable), 801-1938
One-mark capillary pipettes, 797-1938
Solid bituminous filling compounds for cable boxes on systems up to and including 11,000 volts, 803-1938
Tarmacadam, Part 1. Tarmacadam (granite, limestone, and slag aggregate). Part 2, the surfacing of roads with tarmacadam, 802-1938

Revised

Steel for die blocks for drop forgings (superseding B.S. 224-1925), 224-1938
Round strand steel wire ropes for cranes (superseding B.S. 302-1927), 302-1938

Orders for copies of these standards should refer to the British and Australian Standard serial numbers.

New standards have also been received recently from Belgium, Czechoslovakia, Finland, Germany, Italy, and Poland. These standards are available in the language of the country in which they were issued. Lists showing the titles of the new standards in their own language may be borrowed from the ASA office if members are interested in standards from any of these countries.

Standardization— The Automatic Pilot of Management

To free itself from routine problems, management adopts standards which operate automatically, but are adaptable to changes

THE old republic of Venice standardized ships and their rigging to make them all behave the same way under given weather conditions and thus keep them moving together as a fleet. This is symbolic:—coordinated action is the ultimate purpose of all standardization. Herein lies its essential significance as a function of management.

So far, standards have been given attention mostly as valuable, if not indispensable, tools in the technical field, such as the design, manufacture, and servicing of industrial products—automobiles, electric motors, telephones. The benefits of these technical standards are invaluable. Yet, from the viewpoint of human cooperation the capacity of standardization to harmonize the functions of the several departments in a business concern, or on a larger scale of entire companies and even industries, is still more significant.

Comparing an organization with a machine, its successful performance depends on two conditions. In a machine, the component parts must fit correctly together. To achieve this, standard manufacturing limits for all exacting dimensions are specified and maintained—witness the crankpins and journals of an automobile crankshaft. Moreover, the machine must be operated in an expert manner. An airplane's performance requires constant adjustment to the conditions existing at any given time. And to relieve the human pilot of his strenuous duties, we install an automatic pilot in the

by

John Gaillard

Mechanical Engineer, American Standards Association

plane to do some of the observing and adjusting for him.

An organization also must have correct "fitting"—that is, harmonious cooperation—between its several functions. To this end, standard specifications for duties, responsibilities, and individual performances must be set up. And in the "operation," or management of the business, the executive, as the pilot, should also be assisted in his task by an agency which takes care of all matters that do not require his regular attention. This is the function of standardization performed by a central coordinating department—the automatic pilot of management.

If this mechanistic conception of an organization creates suspicion of an attempt to "dehumanize" management, we may also turn to the biologic conception—that of an organism. In putting a standards department into a business concern, we follow the example of Nature, which in the course of the ages has developed in vertebrates the cerebellum—that portion of the brain system which automatically coordinates functions originated and controlled by other parts. Creatures that

¹Abstract of talk given on July 2, 1938, at the Eighth Annual Economics Conference held at Stevens Engineering Camp, Johnsonburg, N. J.

crawl or creep have a small cerebellum; human beings and other highly developed organisms have a large one. If we substitute an organization for an organism, may we not judge the quality of the management by the extent to which standardization has been developed as a part of its system?

Building a standards department into an organization (it does not just grow there, as does a cerebellum in an organism) requires expert knowledge and hand-tooling to the requirements of the organization. We cannot entirely "standardize standardization" even though a number of principles underlying the philosophy and practical application of standardization have been developed during the last ten or fifteen years. These principles aim at the design of standards, and of an entire standardization program, with such flexibility as to permit ready adaptability to changes; in the demands of the market, for example. This modern technique should remove once for all the fear that has long existed on the part of executives—that standardization would lead to stagnation, thus impairing their business.

To get the full benefit of the experience now accumulated, every industrial concern in this country should do two things.

First, it should become a member of the American Standards Association. This body was founded twenty years ago by five engineering societies and now counts some seventy technical societies, trade associations, and departments of the Federal Government among its membership. It has already set up about 400 American Standards while many more are in the course of development. Also, this body keeps in close touch with the national standardization work in 24 other countries and is itself a member-body of the International Standards Association which has headquarters in Basle, Switzerland.

Second, every company should set up its own standards department—an investment that always pays ample dividends. In the early stage, it will be advisable to get an expert "coach" to train the company's personnel in this particular kind of work.

Standardization, the key to the coordination of business activities, finds an increasing amount of recognition on the part of progressive executives as a positive, vital, constructive force which cannot be neglected if management is to produce maximum results.

A.I.E.E. Elects Parker, Farmer President and Vice-President

John C. Parker, vice-president of the Consolidated Edison Company of New York, and a member of the Board of Directors of the American Standards Association, was elected president of the American Institute of Electrical Engineers at the annual meeting of its Board of Directors in June.

F. M. Farmer, vice-president, Electrical Testing Laboratories, who is chairman of the Standards Council of the American Standards Association, was elected vice-president of the A.I.E.E. W. I. Schlichter of New York was re-elected treasurer.

National Research Council, which recommended development of the standard, said.

The organization of the proposed project has been turned over to the C.E.S.A. committee on the National Building Code.

Redwood Specifications Published

The California redwood industry announces publication of new specifications designed to "provide structural timber users with a material of definite specific gravity." The specifications are based on several years of active research into the strength and durability of lumber.

The new publication, "Standard Specifications for Structural Grades of California Redwood Lumber," has just been released and is available to engineers by writing the California Redwood Association, 405 Montgomery Street, San Francisco. This amends and replaces the specification for structural grades published in October, 1936.

In addition to establishing the new specific gravity tests, several minor characteristics, heretofore permitted in structural redwood, are now excluded. These include box-heart pieces, excessively sappy lumber and objectionable angle of grain.

Standard Fire Tests On Canadian Program

A standard on Fire Tests for Building Construction and Materials similar to the standard fire tests developed by the American Society for Testing Materials, A.S.T.M. C19-38, will be prepared by the Canadian Engineering Standards Association, it was decided recently.

Such a standard is fundamental to the Association's work on the National Building Code, the

Committees Report on Sieves Petroleum Products, Coal

PROGRESS has been made in preparing standards on sieves used for testing purposes, and on petroleum products and lubricants, and a revision has been completed of the standard on classification of coals, sectional committees working under the procedure of the American Standards Association reported at the annual meeting of the American Society for Testing Materials at Atlantic City, June 27-July 1. The A.S.T.M. is acting as sponsor for the committees which are preparing these standards. The committees' reports showed the following:

Sieves for Testing Purposes (Z23)—The committee recommended that a proposed standard, just completed, be submitted to the American Standards Association for approval. It is expected that the American Society for Testing Materials and the National Bureau of Standards, which have the administrative leadership of the work of the committee, will report to the ASA within the next few months.

The proposed standard covers the scope of the work originally outlined for the committee, provisions for both coarse sieves and fine sieves being included in the one document.

The project to develop standards for testing sieves was initiated in 1931 and a sectional committee of about 40 individuals representing over 30 national organizations was set up. The American Society for Testing Materials and the National Bureau of Standards acted as sponsors.

The work of the committee was planned to include:

1. Coarse sieves (square mesh and round openings if standards for both were found necessary)
2. Fine sieves
3. Presentation of data
4. Calibration of sieves
5. Special requirements, if found necessary, for materials such as pigments

As a basis for the committee's work there were available A.S.T.M. standards E 11-26, Specifications for Sieves for Testing Purposes and E 17-36, Specifications for Round-Hole Screens for Testing Purposes.

Petroleum Products and Lubricants (Z11)

—This committee recommended changes in a number of the test methods under its supervision.

Mention was made of the organization by the American Gear Manufacturers Association of a committee to develop classifications for gear lubricants. In the work of this committee representatives of the American Society for Testing Materials, the American Society of Mechanical

Engineers, the Society of Automotive Engineers, and the American Petroleum Institute will cooperate. It is hoped that from this work more comprehensive classifications of gear lubricants may be set up.

Satisfactory progress is being made in the preparation of articles describing various subjects within the scope of the committee, it was announced. Sections on lubricating oils by J. C. Geniesse, on gasoline by T. A. Boyd, and on the status of research on fuels and lubricating oils for spark-ignition aircraft engines by S. D. Heron have been accepted by the committee. Sections on petroleum greases, on Diesel fuels, and on fuel oils other than Diesel fuels are in course of preparation. When these sections are completed and accepted by the sectional committee, the A.S.T.M. expects to publish the various papers in one pamphlet as a comprehensive symposium on definite features of petroleum technology bearing on the committee's work on standards for petroleum products.

Classification of Coals (M20)—The sectional committee for this project recommended that a minor revision constituting a refinement of the laboratory procedures be made in the wording of one section of the American Standard for Classification of Coals by Rank (M20.1-1937; A.S.T.M. D 288-37).

The committee also recommended that the present A.S.T.M. tentative method of designating the sizes of coal from its screen analysis (D 431-36T) be advanced to standard and submitted to the ASA for approval as American Standard following its adoption by the American Society for Testing Materials.

A subcommittee is now giving consideration to definitions of terms relating to commercially recognized varieties of bituminous and sub-bituminous coal. Tentative definitions for common-banded coal, splint coal, cannel coal, and bog-head coal were presented.

Italians Ask American Comment On Proposed Tests for Rubber

The Italian national standardizing body has prepared a proposed standard for mechanical tests of rubber on which it is asking comments from American industry. Any one interested may borrow a copy from the ASA Library.

How the Imperial Chemical Industries, Ltd., Saves Through Its Standardization Program

SOME vague idea of the variety of the Company's [the Imperial Chemical Industries]¹ activities and of the multiplicity of the materials handled may be gleaned from the fact that in the company's purchasing inventory more than one hundred thousand items appear. A wide and fruitful field for economy is therefore revealed. The sections upon which standardization operations have commenced are as follows: (1) Engineering stores; (2) lubricants; (3) chemicals; (4) packages; (5) office supplies.

Coordinates Work

Sectional committees, composed, needless to say, of men with special knowledge of their particular subjects, link up with the Central Purchasing Department in which the Standards Division has its secretariat. The standards secretary coordinates all efforts towards standardization made within the company, and to this end acts as liaison between the various factories, the Central Purchasing Department, and the supplying firms.

The Engineering Section may be taken as an example of how the system, in a broad way, functions. Attached to each of the Company's Groups is a standards engineer, part of whose duty it is to prepare lists of the articles within his Group which are used for a specific purpose. This list is forwarded to the Standards Division, where similar lists from other Groups are received and coordinated. The standards secretary may thereafter make recommendations as to the elimination of redundant or less efficient items and the adoption of others more suitable. The committee (made up of a standards representative from each Group and the head of the Office Organization Department) at its meeting considers the proposals, together with suggestions put forward by the Central Purchasing Department.

¹This is an abstract of an article by Leonard H. Swinbank published in the *Magazine of Imperial Chemical Industries, Ltd.*, London, May, 1938.

British company finds economy through its Standards Division

The matter for consideration by the committee is how, by simplification, it can reduce the kinds and sizes of the various commodities to the smallest number which could be regarded as consistent with efficient working. When the elimination process is complete those left are regarded as "standard" and each given its own peculiar and detailed purchasing specification. Larger quantities each of a few types (very clearly specified) emerge, where, formerly, were ordered smaller quantities each of many types. That, as has been said, entails longer "runs" and therefore reduces the cost.

Experience Is Pooled

There is nothing haphazard in this method of procedure, for while any one factory may institute research into the possible improvement of a material or type, it is a matter of routine to communicate its intention, through the Standards Division of the Purchasing Department, to all other interested factories. While the search for improvements or economies goes on persistently, it is obvious that there is no waste of time through one section commencing the study of a problem which, at another section, is well on the way to solution. It may be, of course, that concurrent tests are in progress at various factories, but here again there is nothing haphazard about the procedure but a methodical dispersion of enquiry and examination. Results are brought to a common center, comparisons are made, and experience pooled and finally steps taken towards simplification and consequent standardization.

It is impossible to give details, but from the following some idea of the wide field being covered may be gathered.

(1) Engineering Stores Section

	Original Schedule	Revised Schedule	Percentage Reduction
Files	1,027	367	64.30
Locks, latches, and padlocks	421	130	69.12
Transmission belting ..	661	374	58.09
Wood screws	1,390	578	41.58
Jointing materials	336	156	53.56
Rubber hose and tubing	493	212	57.00
Brushes	680	335	50.07
Buckets	82	41	50.00
Steam traps	121	60	50.41
Bolts and nuts	3,938	1,481	59.85

Note: For the sake of clarity it should be explained that the above figures are *aggregates* throughout the company and do not represent the actual number of varying types and sizes. For example, the figure of the original schedule for Files (1,027) might include, say, eight—one for each group—of a number of similar such types and sizes. The actual types of file carried before standardization numbered 450 and this has been reduced to 186.

(2) Lubricants

Before the adoption of the new I.C.I. specification for general lubricating oils, a very wide range of proprietary oils was employed—at prices which varied over an equally wide range. Simplification resulted in our present specification which, by the use of ten oils only, provides us with approximately 70 per cent of our needs, varying from zero temperature to that of superheated steam.

The same story can be told as regards greases.

(3) Chemicals

Specifications for chemicals are prepared by the Research Departments of the various Groups—here, again, the bureau for coordination and dissemination being the Standards Division of the Purchasing Department. Where different factories used varying qualities or strengths of a material, endeavor has been made to bring all to a common level—where that is practicable—and the work is being carried on steadily.

These specifications of chemicals (about 850 in all) are printed and give detailed analyses and precise information as to methods of testing. Their necessity can readily be realized since they ensure the delivery of supplies to a guaranteed standard.

(4) Packages

It must be apparent that the great variety of our products entails a variety of packings. For certain Groups new specifications have been drawn up relating to steel drums, cans, kegs, etc., while others govern the supply of certain jute

Standards Not Static

"There is nothing which is static or unalterable about a standard, but it is only alterable along lines of ordered progress and is not subject to mere whims or fancies or prejudices. Once a standard has been laid down it becomes an established basis for the commodity, type, or size to which it actually refers. But that does not mean the end, otherwise all initiative would be defeated and research rendered abortive.

"Industry pushes ever onward, striving to attain to higher or better levels, and so it follows that when, after adequate testing, a new and superior type can be evolved, the new type becomes, in turn, the new standard. In this way progress is not stultified but becomes orderly and systematic."—Leonard H. Swinbank.

bags, etc., giving details of tests as to yarns, cloth, seam strengths, and so on.

(5) Office Supplies

The Office Organization Department at Millbank is charged with the responsibility of introducing to the company's offices the latest methods and devices where these can be employed with advantage.

In a large organization such as ours it is obvious that operations of a similar nature are performed at a number of centers; hence coordination is being steadily applied in selecting the most suitable stationery, calendars, and furniture as well as machinery for purposes of calculating, typing, ledger-posting, addressing, coin-counting, and so on.

Eliminate Inefficiency

In this short article no more has been done than hint to readers that, first, all over the civilized world an attempt is being made, in production, to eliminate obsolete, redundant, and inefficient things and to standardize upon those things which will effect economy in time, energy, and skill, and that, second, by the methods described—and by many others—the company keeps abreast of the times in the kaleidoscope of ever-changing methods and conditions which makes up our modern industrial life.

Standardize Things, Not Ideas

"If standardization in general is logical and beneficial, the troubles that sometimes result are due to the attempt to standardize the wrong things. Mr. Kettering says that to standardize materials or things is good; but to try to standardize thought, ideas, policies or practices is bad, and fatal to any creative work.

"The benefits resulting from standardizing physical things are almost unlimited. The American Standards Association has done good work along this line. Take the one matter of machine bolts. The variables are the size and shape of the head—the length and diameter of the bolt—the kind of thread—the pitch of the thread—the size and shape of the nut—the material, finish, and several other things. The number of combinations and permutations of that many variables is enormous; and the savings to industry in standardizing this one item are almost unbelievable."

—A. C. Marshall, vice-president and general manager, Detroit Edison Company.

National Bureau of Standards Compiles Codes on Weights

The National Bureau of Standards has just revised its Handbook compiling the codes of specifications and tolerances adopted by the National Conference on Weights and Measures.

In its cooperation with the States in connection with weights and measures administration and in promotion of uniform technical requirements for commercial weighing and measuring equipment, the National Bureau of Standards works with the National Conference on Weights and Measures. The codes adopted by the Conference do not, by reason of such adoption, become effective in particular jurisdictions. To give them legal force they must be promulgated by competent legal authority. Codes adopted by the National Conference are, however, recommended by the Bureau for promulgation by the States.

In 1929 the Bureau published, as Handbook M85, a compilation of the various codes of specifications and tolerances as adopted by the National Conference. That publication became out-

of-date by reason of subsequent additions and amendments to the codes. The present revision, Handbook H22 of the National Bureau of Standards, includes all changes made through the Twenty-Seventh National Conference on Weights and Measures held in 1937.

It includes codes for: Linear measures, fabric-measuring devices, taximeters, and odometers; liquid capacity measures, glass graduates, milk bottles, lubricating-oil bottles, liquid-measuring devices, grease-measuring devices, and vehicle tanks; dry capacity measures, berry boxes and baskets; scales (this series of codes was extensively revised and rearranged in 1936 and 1937) and weights.

Copies of the Handbook, H22, are obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 50 cents each.

U. S. Housing Authority Joins Building Code Committee

The United States Housing Authority, recently created as a permanent agency in the Department of the Interior to handle the government's housing program, has become a member of the Building Code Correlating Committee of the American Standards Association. Albert C. Shire, Technical Director, was named by the Authority as its representative, with Colin Skinner of the Technical Division as his alternate.

The Building Code Correlating Committee is the general administrative committee supervising the ASA's building code program.

A.S.T.M. Issues Cement Standards And Tests In One Volume

All the standard specifications and test methods on cement issued by the American Society for Testing Materials have been compiled and published in one volume by the A.S.T.M. The specifications cover portland cement, high-early-strength portland cement, natural cement, and masonry cement. The methods of testing involve portland cement, chemical analysis, compressive strength of mortars, and fineness.

The Manual of Cement Testing is included in the compilation, as well as a selected bibliography of literature on portland cement.

Copies of the 96-page publication are available from the American Society for Testing Materials, 260 S. Broad St., Philadelphia, at \$1.00 each.

British Delegation Studies ASA Methods for Textile Standards

Similarities and differences in the British and American approach toward standards for textiles were discussed by a delegation from the Textile Institute of Great Britain and the staff of the American Standards Association when the British delegation visited the ASA office May 24.

The British activities, which are expected to lead to organization of an advisory council in the British Standards Institution, were started over a year ago when efforts were made to coordinate activities of British textile manufacturers in order to unify methods of testing textiles, Frank Nasmith of the Textile Institute explained. Recently an advisory committee, including representatives of various branches of the British textile industry, and the British Retail Trading Association, has been organized. This committee is expected to form the basis for the group to be affiliated with the British Standards Institution.

American activities have approached the problem from a different angle, consumers and retailers having been organized in the Advisory Committee on Ultimate Consumer Goods of the American Standards Association to advise on the possibility of establishing standards for textiles as well as other types of consumer goods. Although not represented on the Advisory Commit-

ASA Consumer Committee "Doing First Rate Job"

"One, and only one, commercially sponsored consumer activity seems to me to be doing a first-rate, above-board consumer job. This is the Consumer-Retailer Relations Council and the Consumer Committee in the American Standards Association which together are being promoted and assisted by the National Retail Dry Goods Association. I offer it as a proof that business can take part in the consumer movement by means that are honorable and dignified and with due respect to the independence and integrity of consumer leaders."

—D. E. Montgomery, sales counsellor, American Marketing Association, at the Association's spring meeting, Washington, May 20-21.

tee, manufacturers are represented on all technical committees actually developing standards for textiles.

Industry Further Reduces List of Box Sizes

The Division of Simplified Practice, National Bureau of Standards, has announced a revision in the recommended list of corrugated and solid fiber boxes for canned fruits and vegetables. The original recommendation, which was approved at a general conference of producers, distributors, and users in 1931, established a list of 41 sizes, and the revised list shows 26, a reduction of 15 sizes.

This reduction in the number of box sizes was made possible by the reduction in the number of recommended sizes for the cans themselves, which became effective last September. The recommended list of sizes for cans for fruits and vegetables was reduced from 27 to 21.

The current revision of the recommended list of fiber box sizes is identified as Simplified Practice Recommendation R146-38. Until printed copies are available, mimeographed copies may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Canadian Association Issues Specifications for Cable

Specification 48 on construction and test of non-metallic sheathed cable of the Canadian Electrical Code, Part 2, was issued recently by the Canadian Electrical Standards Association. The specifications outline conditions which must be met to secure laboratory approval for the sale and use of electrical equipment in Canada.

The preliminary draft was prepared by the laboratory staff of the Hydro-Electric Power Commission of Ontario which was able to make laboratory tests of electrical equipment as background for the specifications. Drafts were also submitted to the Electrical Committee of the British Standards Institution, to the National Electrical Manufacturers Association, and to Underwriters' Laboratories.

The first edition of the specifications is issued in mimeograph form, and will be reviewed further before being published.

Copies may be borrowed or purchased at 50 cents each from the American Standards Association office.

How Purchasing Agents Lead in Standardization

"Being interested in economies and methods of making savings, the purchasing agent naturally becomes one of the leaders at his institution in promoting and carrying out a program of standardization of purchases.

"By standardization we think of a plan whereby the number, sizes, kinds, and types of articles are reduced to a minimum, with as many departments using these same articles as is possible. Costs are reduced on original purchases when the variety of articles is limited. It is possible to buy larger quantities for distribution through the storehouse if a good standard has been agreed upon. It is possible to interchange between departments and between buildings, equipment which has been standardized.

"The best method at the purchasing agent's command for working out a standardization of products purchased is through the storehouse. It has been our experience that where good, useable materials are stocked in large enough quantities to meet the demand in the storehouse that depart-

ments which are requisitioning other than these materials will often be willing to use the storehouse item for the sake of convenience in securing immediate use and also in order to secure the lowest price, which the storehouse is able to offer due to increased buying power.

Saving by Standardization

"Prior to the establishment of a central materials storehouse at U.C.L.A., in 1930, we purchased approximately six different kinds of microscope slides, eight different makes of rubber tubing and three different types of scouring powders. Today in that storehouse we supply all departments with two types of microscope slides, two types of rubber tubing in various sizes, and one scouring powder, thereby reducing the variety of these three items from seventeen to five."—*D. L. Wilt, Purchasing Agent, University of California, in "The Educational Business Manager and Buyer," April, 1938.*

Standardization Would Cut Air-Conditioning Cost

Greater standardization in the plans and forms of buildings would help reduce the cost of air-conditioning, Willis H. Carrier of the Carrier Corporation, Syracuse, N. Y., told 25 editors of trade publications who visited his plant April 8.

Mass production is severely limited, Mr. Carrier said, because each air-conditioning system must usually be designed for a highly individualized enclosure. The only exception is equipment adapted to a single room, such as an office or store.

New Kinds of Twine Added in Simplified Practice Recommendation

Adding new kinds and put-ups of twine for which there is general demand, the current revision of Simplified Practice Recommendation R92-32, Hard Fiber Twine and Lath Yarn, has been accepted by the industry, and is effective from April 1, 1938.

Nomenclature, ply, feet per pound, tensile strength, and put-ups for various kinds and classes

of hard fiber twines, including lath yarns, are listed.

Until printed copies are available, mimeographed copies of the revised recommendation, Simplified Practice Recommendation R92-38, may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Canadians Issue Standards For Reinforcing Materials

Standard specifications for reinforcing materials for concrete, including five standards in one volume, were issued recently by the Canadian Engineering Standards Association.

The specifications cover:

- Billet-steel concrete reinforcing bars, G30-1938
- Rail-steel concrete reinforcing bars, G31-1938
- Cold-drawn steel wire for concrete reinforcement, G32-1938
- Fabricated steel bar or rod mats for concrete reinforcement, G45-1938
- Welded steel wire fabric for concrete reinforcement, G46-1938

The standards may be borrowed or purchased at 75 cents through the office of the American Standards Association.

Prentis Named Trustee Of Columbia University

Edmund A. Prentis, vice-president of the American Standards Association, and a member of the firm of Spencer, White, and Prentis, has been appointed one of the six alumni trustees of Columbia University, it was announced at the annual alumni luncheon, June 1.

A.S.T.M. Approves New Test For Sediment in Fuel Oil

The American Society for Testing Materials has just approved a new proposed Tentative Method of Test for Sediment in Fuel Oil by Extraction and also important revisions of the Tentative Specifications for Fuel Oils (A.S.T.M. D 396-43 T). This action was taken on the recommendation of Committee D-2 on Petroleum Products and Lubricants.

The test for sediment in fuel oil by extraction, (A.S.T.M. D 473-38 T) is based upon a method used by the Federal Specifications Board for many years and it seemed desirable to issue it as an A.S.T.M. standardized test because it is used in one of the requirements incorporated in the proposed revisions of the fuel oil specifications.

The suggestions for improvement in the fuel oil specifications have been given consideration for some time. The changes which have been approved represent the best compromise so far reached and in the opinion of Committee D-2 the revised specifications will fit present-day needs better than those originally issued.

For copies of these new tentative standards, write to the American Society for Testing Materials, 260 South Broad Street, Philadelphia.

Bureau of Standards Prepares Tables for Thermocouples

Standard tables for iron-constantan and copper-constantan thermocouples have been prepared by William F. Roeser and Andrew I. Dahl of the National Bureau of Standards.

A large and constantly increasing proportion of the temperature measurements required in industrial processes are made by means of thermocouples, and of these, the greater proportion consist of iron and constantan wires. Constantan is an alloy of about 55 parts of copper with 45 parts of nickel. In order to use a thermocouple it is necessary to have an indicating or recording instrument, which is usually graduated to indicate temperatures in degrees Fahrenheit. The indica-



Edmund A. Prentis

ting instrument is relatively expensive and lasts for many years, while the thermocouple wires are comparatively cheap but have to be renewed frequently. The user of thermocouples must, therefore, be able to obtain new thermocouple wires which have the same properties as the original ones, so that temperatures will be indicated correctly when the new couple is connected to the old instrument.

After making measurements on a large number of representative samples of iron, constantan, and copper obtained from sources which, they believe, will in the future probably continue to produce materials having the same properties, William F. Roeser and Andrew I. Dahl have prepared the new tables based on these properties. Thermocouples to match these tables can, therefore, be obtained by combining materials readily available from a number of sources.

"The table for copper-constantan is the same as one of those now in use, but none of the existing tables for iron-constantan could be matched accurately by readily available materials," says the announcement of the new tables in the *Technical News Bulletin*, March. "The new tables for iron-constantan is near the average of previous tables, and is not greatly different from the one table most widely used. Actually, most of the couples sold to match this old table really match the new table better than the original.

"If the new tables are accepted generally by users and manufacturers of thermocouples, the problem of replacing thermocouples will be greatly simplified."

The *Journal of Research* for March published by the Government Printing Office, Washington, D. C., gives these tables as part of RP1080.

Four Standards *Help to* Measure Sound

Acoustical Terminology (standard terms and definitions)
Z24.1-1936

Noise Measurement (principles for measuring loudness and intensity of sounds) Z24.2-1936

Sound Level Meters for Measurement of Noise and Other Sounds
(standards for design of meters with comparable characteristics) Z24.3-1936

Calibration of Microphones (standard practice in calibrating microphones to assure comparable results) Z24.4-1938

25 cents each

ASA members are entitled to 20 per cent discount on all American Standards ordered through the ASA office.

American Standards Association
29 West 39th Street New York